

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Charles J. JACOBUS et al. Examiner: To Be Assigned
Application No.: To Be Assigned Art Unit: To Be Assigned
Filed: Herewith
For: FORCE FEEDBACK SYSTEM AND ACTUATOR
POWER MANAGEMENT

Mail Stop: Patent Application
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

Pursuant to 37 C.F.R. §§ 1.56, 1.97, and 1.98, Applicants submit herewith on Form PTO-1449 and 892 a listing of documents known to the Applicants and/or their attorney. Applicants respectfully request consideration of the cited documents and making the same of record in the prosecution of the above-identified application. In so doing, Applicants do not waive any rights to take appropriate action to establish patentability over the listed documents should they be applied as references against the claims of the present application.

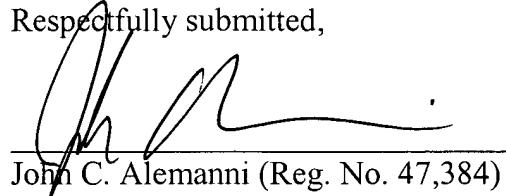
Application No.: To Be Assigned
Filed: Herewith

PATENT
Express Mail No. EV 367 776 620 US
Attorney Docket No.: IMM069E

This Information Disclosure Statement is being submitted with the application, and, therefore, no certification or fee is required (37 C.F.R. § 1.97b(1)). However, should any fees be due, the Commissioner is authorized to charge such fees to Deposit Account No. 16-1435. A duplicate of this sheet is attached for that purpose.

Respectfully submitted,

Date: 2/27/07


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51851-282042
WINLIB01:1060237.1

Notice of References Cited		Application/Control No.	Applicant(s)/Patent Under Reexamination	
		09/638,485	JACOBUS ET AL.	
		Examiner	Art Unit	Page 1 of 3
		Paul Ip	2837	

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*	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	DOCUMENT SOURCE **	
						APS	OTHER
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<input checked="" type="checkbox"/>	B 5,331,264	Jul. 1994	Cheng et al.	318	568.11	<input type="checkbox"/>	<input type="checkbox"/>
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<input checked="" type="checkbox"/>	E 4,913,000	Apr. 1990	Wyllie	74	523	<input type="checkbox"/>	<input type="checkbox"/>
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<input checked="" type="checkbox"/>	H 4,887,222	Dec. 1989	Miyake et al.	901	15	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	I 4,853,874	Aug. 1989	Iwamoto et al.	364	513	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	J 4,837,734	Jun. 1989	Ichikawa et al.	364	513	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	K 4,795,296	Jan. 1989	Jau	--	--	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	L 4,680,519	Jul. 1987	Chand et al.	--	--	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	M 4,661,032	Apr. 1987	Arai	--	--	<input type="checkbox"/>	<input type="checkbox"/>

FOREIGN PATENT DOCUMENTS

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NON-PATENT DOCUMENTS

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PTO-892 (Rev. 03-98)

Notice of References Cited			Application/Control No.	Applicant(s)/Patent Under Reexamination		
			09/638,485	JACOBUS ET AL.		
			Examiner	Art Unit	Page 2 of 3	
			Paul Ip	2837		

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<input checked="" type="checkbox"/> I	4,420,808	Dec. 1983	Diamond et al.	--	--	<input type="checkbox"/>	<input type="checkbox"/>
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Paul Ip			2837	Page 3 of 3		

U.S. PATENT DOCUMENTS

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<input checked="" type="checkbox"/>	L	3,447,766	Jun. 1969	Palfreyman	--	--	<input type="checkbox"/>	<input type="checkbox"/>
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EXPRESS MAIL NO. EV 367776620US

EV 032 107 578 US

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**SUPPLEMENTAL
INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

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Sheet

1 of 1

Complete if Known

Application Number	09/638,485
Filing Date	August 14, 2000
First Named Inventor	JACOBUS, Charles J.
Art Unit	2837
Examiner Name	SMITH, Tyrone W.
Attorney Docket Number	IMM069D

U.S. PATENT DOCUMENTS

Examiner	Cite No. ¹	Document Number		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code ² (if known)			
	1	6,219,034		4/17/01	Elbing, et al.	

Examiner Initials*	Cite No. ¹	Foreign Patent Document			Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Country Code ³	Number ⁴	Kind Code ⁵ (if known)			
	2	JP	01-003664		7/19/1990	Taito Corporation	✓
	3	JP	02-109714		1/13/1992	Epoch Co. and Key-Planning Co.	✓
	4	JP	05-193862		1/27/1995	Sega Corporation	✓
	5	JP	04-007371		8/3/1993	Taito Corporation	✓

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	
	6	SCANNELL, "Taking a Joystick Ride," Computer Currents, Boston Edition, Vol. 9, No. 11, November 1994.	

Examiner Signature	Date Considered
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* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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Application/Control No.

09/638,485

Applicant(s)/Patent Under

Reexamination

JACOBUS ET AL

Examiner

Tyrone W Smith

Art Unit

2837

Page 1 of 1

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	B	US-4621332	11-1986	Sugimoto et al	364/513
	C	US-4791588	12-1988	Onda et al	364/513
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	F	US-			
	G	US-			
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FOREIGN PATENT DOCUMENTS

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NON-PATENT DOCUMENTS

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet

1

of

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Application Number	09/638,485
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Examiner Name	Tyrone W. Smith

Attorney Docket Number

IMM069D

U.S. PATENT DOCUMENTS

Examiner	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number Kind Code ² (if known)			
AA		3,220,121	11/30/1965	Cutler	
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AU		4,930,770	6/5/1990	Baker	
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BC		5,547,382	8/20/1996	Yamasaki	
BD		5,212,473	5/18/1993	Louis	
BE		5,466,213	11/14/1995	Hogan	
BF		5,766,016	6/16/1998	Sinclair	
BG		5,186,685	2/16/1993	Mangseth et al.	
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		6,111,577	8/29/2000	Zilles et al.	

Examiner Signature	Date Considered
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²Applicant's unique citation designation number (optional). ³Kinds of U.S. Patent Documents at www.uspto.gov or MPEP 901.04. ⁴Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁵For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁶Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁷Applicant is to place a check mark here if English language Translation is attached.

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Sheet

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		Country Code ³	Number ⁴	Kind Code ⁵ (If known)			
BI	EP	EP	EP0349086		1/31/1990	Visser	

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Group Art Unit	2837
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OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
	BJ	BAIGRIE, "Electric Control Loading – A Low Cost, High Performance Alternative," Proceedings, pp. 247-254, November 6-8, 1990.
	BK	IWATA, "Pen-based Haptic Virtual Environment," 0-7803-1363-1/93 IEEE, pp 287-292, 1993.
	BL	RUSSO, "The Design and Implementation of a Three Degree of Freedom Force Output Joystick," MIT Libraries Archives 08/14/1990, pp. 1-131, May 1990.
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	BN	JONES et al., "A perceptual analysis of stiffness," ISSN 0014-4819 Springer International (Springer-Vertag); Experimental Brain Research, Vol. 79, No. 1, pp. 150-156, 1990.
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	BU	GOTOW et al., "Controlled Impedance Test Apparatus for Studying Human Interpretation of Kinesthetic Feedback," WA11-11:00, pp. 332-337
	BV	STANLEY et al., "Computer Simulation of Interacting Dynamic Mechanical Systems Using Distributed Memory Parallel Processors," DSV-Vol. 42, Advances in Robotics, pp. 55-81, ASME 1992.
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Examiner Signature	Date Considered
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹Applicant's unique citation designation number (optional). ²Kinds of U.S. Patent Documents at www.uspto.gov or MPEP 901.04. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶Applicant is to place a check mark here if English language Translation is attached.

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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

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Sheet

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of

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Complete If Known

Application Number	09/638,485
Filing Date	August 14, 2000
First Named Inventor	Charles J. JACOBUS
Group Art Unit	2837
Examiner Name	Tyrone W. Smith

Attorney Docket Number

IMM069D

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
	BX	KONTARINIS et al., "Display of High-Frequency Tactile Information to Teleoperators," Telemanipulator Technology and Space Telerobotics, Won S. Kim, Editor, Proc. SPIE Vol. 2057, pp. 40-50, Sep. 7-9, 1993.
	BY	PATRICK et al., "Design and Testing of A Non-reactive, Fingertip, Tactile Display for Interaction with Remote Environments," Cooperative Intelligent Robotics in Space, Rui J. deFigueiredo et al., Editor, Proc. SPIE Vol. 1387, pp. 215-222, 1990.
	BZ	ADELSTEIN, "A Virtual Environment System For The Study of Human Arm Tremor," Ph.D. Dissertation, Dept. of Mechanical Engineering, MIT, June 1989.
	CA	BEJCZY, "Sensors, Controls, and Man-Machine Interface for Advanced Teleoperation," Science, Vol. 208, No. 4450, pp. 1327-1335, 1980.
	CB	BEJCZY, "Generalization of Bilateral Force-Reflecting Control of Manipulators," Proceedings Of Fourth CISMM-IFTOMM, Sep. 8-12, 1981.
	CC	MCAFEE, "Teleoperator Subsystem/Telerobot Demonsdrator: Force Reflecting Hand Controller Equipment Manual," JPL D-5172, pp. 1-50, A1-A36, B1-B5, C1-C36, January 1988.
	CD	MINSKY, "Computational Haptics: The Sandpaper System for Synthesizing Textue for a Force-Feedback Display," Ph.D. Dissertation, MIT, June 1995.
	CE	JACOBSEN et al., "High Performance, Dextrous Telerobotic Manipulator With Force Reflection," Intervention/ROV '91 Conference & Exposition, Hollywood, Florida, May 21-23, 1991.
	CF	SHIMOGA, "Finger Force and Touch Feedback Issues in Dexterous Telemanipulation," Proceedings of Fourth Annual Conference on Intelligent Robotic Systems for Space Exploration, Rensselaer Polytechnic Institute, Sep. 30 - Oct. 1, 1992.
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	CH	TERRY et al., "Tactile Feedback In A Computer Mouse," Proceedings of Fourteenth Annual Northeast Bioengineering Conference, University of New Hampshire, March 10-11, 1988.
	CI	HOWE, "A Force-Reflecting Teleoperated Hand System for the Study of Tactile Sensing in Precision Manipulation," Proceedings of the 1992 IEEE International Conference on Robotics and Automation, Nice, France, May 1992.
	CJ	EBERHARDT et al., "OMAR – A Haptic display for speech perception by deaf and def-blind individuals," IEEE Virtual Reality Annual International Symposium, Seattle, WA, Sep. 18-22, 1993.
	CK	RABINOWITZ et al., "Multidimensional tactile displays: Identification of vibratory intensity, frequency, and contractor area," Journal of The Accoustical Society of America, Vol. 82, No. 4, October 1987.

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	CL	BEJCZY et al., "Kinesthetic Coupling Between Operator and Remote Manipulator," International Computer Technology Conference, The American Society of Mechanical Engineers, San Francisco, CA, August 12-15, 1980.
	CM	BEJCZY et al., "A Laboratory Breadboard System For Dual-Arm Teleoperation," SOAR '89 Workshop, JSC, Houston, TX, July 25-27, 1989.
	CN	OUH-YOUNG, "A Low-Cost Force Feedback Joystick and Its Use in PC Video Games," IEEE Transactions on Consumer Electronics, Vol. 41, No. 3, August 1995.
	CO	MARCUS, "Touch Feedback in Surgery," Proceedings of Virtual Reality and Medicine The Cutting Edge, Sep. 8-11, 1994.
	CP	BEJCZY, et al., "Universal Computer Control System (UCCS) For Space Telerobots," CH2413-3/87/0000/0318501.00 1987 IEEE, 1987.
	CQ	AUKSTAKALNIS et al., "Silicon Mirage: The Art and Science of Virtual Reality," ISBN 0-938151-82-7, pp. 129-180, 1992.
	CR	EBERHARDT et al., "Including Dynamic Haptic Perception by The Hand: System Description and Some Results," DSC-Vol. 55-1, Dynamic Systems and Control: Volume 1, ASME 1994.
	CS	GOBEL et al., "Tactile Feedback Applied to Computer Mice," International Journal of Human-Computer Interaction, Vol. 7, No. 1, pp. 1-24, 1995.
	CT	PIMENTEL et al., "Virtual Reality: through the new looking glass," 2 nd Edition; McGraw-Hill, ISBN 0-07-050167-X, pp. 41-202, 1994.
	CU	"Cyberman Technical Specification," Logitech Cyberman SWIFT Supplement, 4/5/1994.
	CV	OUHYOUNG et al., "The Development of A Low-Cost Force Feedback Joystick and Its Use in the Virtual Reality Environment," Proceedings of the Third Pacific Conference on Computer Graphics and Applications, Pacific Graphics '95, Seoul, Korea, 21-24 August 1995.
	CW	KACZMAREK et al., "Tactile Displays," Virtual Environment Technologies.

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Form 1449 (Modified)		Atty Docket No.: IMM1P069D	Application No.: 09/638,485
Information Disclosure Statement By Applicant		Applicant: Schuler et al.	
(Use Several Sheets if Necessary)		Filing Date: 8/14/00	Group: 2837

U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
	A	4,937,685	6/26/90	Barker et al.	360	14.1	12/2/83
	B	4,964,004	10/16/90	Barker	360	14.1	6/16/89
	C	4,983,901	1/8/91	Lehmer	318	685	4/21/89
	D	5,076,517	12/31/91	Ferranti et al.	244	228	8/14/89
	E	5,184,319	2/2/93	Kramer	364	806	2/2/90
	F	5,286,203	2/15/94	Fuller et al.	434	45	10/7/92
	G	5,354,162	10/11/94	Burdea et al.	414	5	8/31/92
	H	5,428,748	6/27/95	Davidson et al.	395	275	9/24/92
	I	5,634,794	6/3/97	Hildreth et al.	434	37	3/23/95
	J	5,742,278	4/21/98	Chen et al.	345	156	11/1/95
	K	5,781,172	7/14/98	Engel et al.	345	164	6/16/97

Foreign Patent or Published Foreign Patent Application

Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub-class	Translation	
							Yes	No
	L	0085518	10.08.83	EPO			X	
	M	0111992	27.06.84	EPO			X	
	N	0349086	03.01.90	EPO			X	
	O	2235310	27.02.91	GB			X	
	P	0326439	2.8.89	EPO				

Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
	R	Flight Simulation, Rolfe, J.M. and Staples, K. J., eds., 1986.
	S	
	T	
Examiner		Date Considered

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U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
	A	5,999,168	12/7/99	Rosenberg et al.	345	161	2/21/97
	B	6,088,017	7/11/00	Tremblay et al.	345	156	4/24/98
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	K						

Foreign Patent or Published Foreign Patent Application

Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub-class	Translation	
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	L	95/20788	3.8.95	PCT			X	
	M	0626634	30.11.94	EPO			X	
	N	H6-210065	2.8.94	Japan			X	
	O	H4-92691	25.3.92	Japan			X	
	P	H5-86387	22.11.93	Japan			X	

Other Documents

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Foreign Patent or Published Foreign Patent Application

Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub-class	Translation	
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L	S62-194389	10.12.87	Japan				X	
M	0607580	27.7.94	EPO				X	
N	92/00559	9.1.92	PCT				X	
O	JP4092691	25.3.92	Japan				X	
P	JP7024147	27.1.95	Japan				X	

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							Yes	No
L	JP4008381	13.1.92	Japan				X	
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Other Documents

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		Applicant: Jacobus et al.	
		Filing Date: 8/14/00	Group: 2837

U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
	A	3,919,691	11/11/75	Noll	340	172.5	5/26/71
	B	4,436,188	03/13/84	Jones	188	378	11/18/81
	C	4,603,284	7/29/86	Perzley	318	568	6/5/84
	D	4,604,016	8/5/86	Joyce	414	7	8/3/83
	E	4,775,289	10/4/88	Kazerooni	414	735	9/25/87
	F	4,795,296	1/3/89	Jau	414	5	11/17/86
	G	4,800,721	01/31/89	Cemenska et al.	60	393	2/13/87
	H	4,861,269	8/29/89	Meenan, Jr.	434	45	03/30/88
	I	4,925,312	5/15/90	Onaga et al.	364	513	3/21/88
	J	4,949,119	8/14/90	Moncrief et al.	364	578	1/12/89
	K	5,007,300	4/16/91	Siva	74	471 XY	1/22/90

Foreign Patent or Published Foreign Patent Application

Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub-class	Translation	
							Yes	No
	L	WO9532459	30 Nov 95	PCT			X	
	M							
	N							
	O							
	P							

Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
	R	Ellis, et al., "Design and Evaluation of a High-Performance Prototype Planar Haptic Interface", DSC-Vol. 49, Advances in Robotics, Mechatronics,nd Haptic Interfaces ASME 1993.
	S	Schmult, "Application Areas for a Force-Feedback Joystick", Department of Machine Perception Research AT&T Bell Laboratories, Holmdel, New Jersey, DSC-Vol 49, Interfaces ASME 1993.
	T	Adelstein, et al., "Design and Implementation of a Force Reflecting Manipulandum for Manual Control Research", Steling Software Aerospace Human Factors Research Division, NASA-Ames, Moffett Field, CA , 1992.
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U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
	A	5,044,956	09/03/91	Behensky et al.	434	45	1/12/89
	B	5,065,145	11/12/91	Purcell	340	706	10/6/89
	C	5,103,404	4/7/92	McIntosh	318	568.22	12/20/89
	D	5,107,080	4/21/92	Rosen	200	6A	12/1/89
	E	5,116,180	5/26/92	Fung et al.	414	5	5/3/90
	F	5,146,566	9/8/92	Hollis, Jr.	395	275	05/29/91
	G	5,156,363	10/20/92	Cizewski et al.	244	223	2/28/91
	H	5,185,561	2/9/93	Good et al.	318	432	7/23/91
	I	5,193,963	3/16/93	McAfee et al.	414	5	10/31/90
	J	5,197,003	3/23/93	Moncrief et al.	364	410	4/7/92
	K	5,203,563	4/20/93	Loper, III	273	148	3/21/91

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Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
	R	Hiroo Iwata, "Pen-based Haptic Virtual Environment", Institute of Engineering Mechanics, University of Tsukuba, Tsukuba, 305 JAPAN
	S	Batter, et al., "Grope-1: A Computer Display to the Sense of Feel", University of North Carolina at Chapel Hill, Chapel Hill, North Carolina, USA
	T	Minsky, et al., "Feeling and Seeing: Issues in Force Display", Department of Computer Science, University of North Carolina at Chapel Hill, Chapel Hill, NC 27599, 1990 ACM.
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		Filing Date: 8/14/00	Group: 2837

U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
	A	5,223,776	6/29/93	Radke et al.	318	568.1	12/31/90
	B	5,228,356	7/20/93	Chuang	74	471	11/25/91
	C	5,264,768	11/23/93	Gregory et al.	318	561	10/6/92
	D	5,275,565	2/23/93	Moncrief	434	29	2/23/93
	E	5,381,080	1/10/95	Schnell et al.	318	566	2/18/93
	F	5,414,337	5/9/95	Schuler	318	561	6/11/93
	G	5,459,382	10/17/95	Jacobus et al.	318	568.11	6/9/94
	H	5,513,100	4/30/96	Parker et al.	364	167.01	6/10/93
	I	5,576,727	11/19/96	Rosenberg et al.	345	179	6/5/95
	J	5,577,981	11/26/96	Jarvik	482	4	8/4/95
	K	5,587,937	12/24/96	Massie et al.	364	578	4/25/95

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	R	Russo, "The Design and Implementation of a Three Degree-of-Freedom Force Output Joystick", Submitted to the Department of Mechanical Engineering on May 11, 1990.
	S	Rosenberg, Louis B., "Perceptual Design of a Virtual Rigid Surface Contact," Center for Design Research Stanford University, Air Force Material Command, April 1993, pp. 1-41.
	T	Atkinson, William D. et al, "Computing with Feeling," Comput. & Graphics, Vol. 2, No. 2-E, pp. 97-103.
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	A	5,589,828	12/31/96	Armstrong	341	20	3/5/92
	B	5,589,854	12/31/96	Tsai	345	161	6/22/95
	C	5,625,576	4/29/97	Massie et al.	364	578	10/1/93
	D	5,642,469	6/24/97	Hannaford	395	99	11/3/94
	E	5,643,087	7/1/97	Marcus et al.	463	38	7/29/94
	F	5,709,219	01/20/98	Chen et al.	128	782	08/01/96
	G	5,721,566	2/24/98	Rosenberg et al.	345	161	6/9/95
	H	5,731,804	3/24/98	Rosenberg	345	156	1/18/95
	I	5,734,373	3/31/98	Rosenberg et al.	345	161	12/1/95
	J	5,767,839	6/16/98	Rosenberg	345	161	3/3/95
	K	5,769,640	7/23/98	Jacobus et al.	434	262	8/10/95

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	R	Adelstein Bernard D. et al., "A High Performance Two Degree-of-Freedom Kinesthetic Interface," Massachusetts Institute of Technology 1992, pp. 108-112.
	S	Hannaford, B. et al., "Performance Evaluation of a Six-Axis Generalized Force-Reflecting Teleoperator," IEEE Transactions on Systems, Man, and Cybernetics, 1991.
	T	Howe, R. et al., "Task Performance with a Dextrous Teleoperated Hand System," Proceedings of SPIE, Vol. 1833, Nov. 1992.
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(Use Several Sheets if Necessary)		Filing Date: 8/14/00	Group: 2837

U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
	A	5,790,108	8/4/98	Salcudean et al.	345	184	10/23/92
	B	5,889,670	3/30/99	Schuler et al.	364	186	6/11/96
	C	5,889,672	3/30/99	Schuler et al.	364	188	6/3/98
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Foreign Patent or Published Foreign Patent Application

Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub-class	Translation	
							Yes	No
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Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
	R	Kelley, A.J. et al., "MagicMouse: Tactile and Kinesthetic Feedback in the Human-Computer Interface using an Electromagnetically Actuated Input/Output Device," Dept. of Elec. Engineering, Univ. of British Columbia, 1993, pp. 1-27.
	S	Iwata, H., "Artificial Reality with Force-feedback: Development of Desktop Virtual Space with Compact Master Manipulator," Computer Graphics, Vol. 24, No. 4, 1990, pp. 165-170.
	T	Hayward, Vincent et al. "Design and Multi-Objective Optimization of a Linkage for a Haptic Interface," Advances in Robot Kinematics and Computationed Geometry, Kluwer Academic Publishers, 1994, pp. 359-368.
Examiner		Date Considered

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form 1449 (Modified)		Atty Docket No.: IMM-00607/03	Application No.: 09/638,485
Information Disclosure Statement By Applicant		Applicant: Jacobus et al.	
(Use Several Sheets if Necessary)		Filing Date: 8/14/00	Group: 2837

U.S. Patent Documents

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Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
	R	Bostrom, M. et al., "Design of An Interactive Lumbar Puncture Simulator With Tactile Feedback," IEEE 0-7803-1363, 1993, pp. 280-286.
	S	Ramstein, Christophe, "The Pantograph: A Large Workspace Haptic Device for a Multimodal Human-Computer Interaction", Computer-Human Interaction, CHI 1994.
	T	Hirota, Koichi, "Development of Surface Display," IEEE 0-7803-1363, 1993, pp. 256-262.
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Form 1449 (Modified) Information Disclosure Statement By Applicant (Use Several Sheets if Necessary)		Atty Docket No.: IMM-00607/03	Application No.: 09/638,485
		Applicant: Jacobus et al.	
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	R	Millman, P. et al., "Design of a Four Degree-of-Freedom Force-Reflecting Manipulandum with a Specified Force/Torque Workspace," IEEE Int'l Conf. on Robotics and Automation, IEEE CH2969-4, 1991, pp. 1488-1493.
	S	Jones, L.A. et al., "A Perceptual Analysis of Stiffness," Experimental Brain Research 1990, pp. 151-156.
	T	Kotoku, Tetsuo, "A Predictive Display with Force Feedback and its Application to Remote Manipulation System with Transmission Time Display," IEEE 1992, July 7-10, 1992, pp. 239-246.
Examiner		Date Considered

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IMM-00607/03

Application No.:

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Applicant:

Jacobus et al.

Filing Date:

8/14/00

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Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
	R	Salcudean, S.E. et al., "A Six Degree-of-Freedom, Hydraulic, One Person Motion Simulator," Dept. of Elec. Engineering, Univ. of British Columbia, 1992, pp. 1-7.
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Schuler et al.
Filing Date:
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09/638,485
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Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
	A	4,538,035	8/27/95	Pool	200	6A	10/13/83
	B	5,113,179	5/12/92	Scott-Jackson	340	709	3/16/90
	C	5,209,661	5/93	Hildreth et al.	434	45	10/29/90
	D	5,220,260	6/15/93	Schuler	318	561	10/24/91
	E	5,366,376	11/22/94	Copperman et al.	434	69	5/22/92
	F	5,368,484	11/29/84	Copperman et al.	434	69	2/17/93
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	H	5,559,432	9/24/96	Logue	324	207.17	6/29/94
	I	5,701,140	12/23/97	Rosenberg et al.	345	156	7/12/94
	J	5,739,811	4/14/98	Rosenberg et al.	345	161	9/27/95
	K	5,880,714	3/9/99	Rosenberg et al.	345	156	1/15/97

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	R	Rutherford, M. "Third Generation Digital Flight Controls," CAE Electronics, Ltd., The Royal Aeronautical Society, 1984 Spring Convention Future Applications and Prospects for Flight Simulation, May 9-10, 1984, paper number 15.
	S	De Vries, L. and Wierda, G. J., "Performance Considerations, Design Criteria and Realization of a Digital Control Loading System," International Air Transport Association, Seventh Flight Simulator Technical Sub-Committee Meeting, Agenda Item 10, Montreal, Sept. 17-20, 1984.
	T	Baradat, Jean and Lacroix, Michel, "Advanced Features in Control Loading and Motion Systems for Simulators," National Security Industrial Association 1 st Interservice/Industry Training Equipment Conference Proceedings, Nov. 27-29, 1981.

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Schuler et al.

Filing Date:

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U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
	A	6,057,828	5/2/00	Rosenberg et al.	345	156	1/16/97
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	R	Norlin, Ken A., "Flight Simulation Software at NASA Dryden Flight Research Center," American Institute of Aeronautics and Astronautic's Flight Simulation Technologies Conference, Baltimore, MD, August 7-10, 1995.
	S	Corrao, Joseph M., "Control Loading," American Institute of Aeronautics and Astronautic's Flight Simulation Update 1987, Jan. 12-16, 1987
	T	Corrao, J.M., "Control Loading," American Institute of Aeronautics and Astronautic's Flight Simulation Update 1988, Jan. 11-15, 1988.
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	R	Rinaldi, P., "Digital Control Loading - A Modular Approach," International Air Transport Association 6 th Meeting of the Flight Simulator Technical Sub-Committee, Montreal, June 1-4, 1982.
	S	Hildreth, Bruce L., Eyermann, Roger E. and Trankle, Thomas Dr., "DC Servo-Motors for High Performance High Reliability Control Loading in Flight Simulators," American Defense Preparedness Association 12 th Interservice/Industry Training System Conference, Nov. 6-8, 1990.
	T	Baigrie, Stephen A., Reflectone Inc., "Electric Control Loading - A Low Cost, High Performance Alternative," American Defense Preparedness Association 12 th Interservice/Industry Training System Conference, Nov. 6-8, 1990.
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	S	Seidensticker, Steve, "Application of Microcomputers to the Simulator 'Linkage' Problem," National Security Industrial Association 4 th Interservice/Industry Training Equipment Conference Proceedings, Nov. 16-18, 1982.
	T	Flight Simulation, Rolfe, J.M. and Staples, K. J., eds., 1986.
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	R	Albers, F. Gerry, "Microcomputer Base for Control Loading," Naval Training Equipment Center 11 th NTEC-Industry Conference Proceedings, NAVTRAEEQUIPCEN IH-306, Nov. 14-16, 1978.
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Examiner		Date Considered

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